

### REMARKS

Reconsideration of this application in view of the above amendments and following remarks is respectfully requested. Claims 1-15 are pending. Claims 1-9 have been withdrawn by the Examiner as directed to a non-elected invention. Claims 10-14 have been amended. Claims 16-21 have been cancelled.

#### ***Status of Pending Claims***

For purpose of clarification, Applicants wish to briefly summarize the status of the pending claims.

This application was originally filed on October 20, 2003 with claims 1-21. By Preliminary Amendment mailed March 26, 2004, a number of the original claims were amended, while other claims were canceled, and new claims added. In addition, a Declaration by one of the co-inventors, Dr. Stephen A. Campbell, was also filed along with the Preliminary Amendment. (Both the Preliminary Amendment and accompanying Declaration are posted on PAIR for this application.)

On November 2, 2006, the Examiner issued a Restriction Requirement directed to original claims 1-21; namely, a two-way restriction between Group I (claims 1-15) and Group II (claims 16-21). In addition, the Examiner required Applicants to elect a specific species for purpose of initial examination. No mention was made of the Preliminary Amendment and Declaration filed March 26, 2004.

By Response mailed December 4, 2006, the undersigned attorney responded to the outstanding Restriction Requirement/Election of Species directed to original claims 1-21. More specifically, Applicants elected without traverse the Group I claims (*i.e.*, claims 1-15), and further elected species 1-4 (*i.e.*, claims 10-15) for purpose of initial examination. (In this regard, please note that this application was transferred to the undersigned mid-prosecution, and the undersigned did not appreciate that an intervening Preliminary Amendment had been filed.)

On January 9, 2007, the Examiner issued the first substantive Office Action on the merits directed to original claims 1-21. In this Office Action, the Examiner indicates that

claims 10-15 are under examination, and has withdrawn claims 1-9 and 16-21 from consideration.

The undersigned has recently spoken to the Examiner by telephone regarding the status of the pending claims in view of the previously filed Preliminary Amendment. During that discussion, the Examiner confirmed that the Preliminary Amendment had not been considered, and requested that prosecution continue based on original claims 1-21 (*i.e.*, as if the Preliminary Amendment had never been filed).

Accordingly, claims 1-21 as originally filed are currently pending in this application.

#### ***Restriction Requirement***

As mentioned above, claims 1-15 (*i.e.*, the Group I claims) have been elected without traverse. Accordingly, claims 16-21 have now been canceled without prejudice to further prosecution of the same in a divisional application.

#### ***Election of Species***

Applicants have previously elected species I-4 for purpose of initial prosecution (*i.e.*, claims 10-15). Of course, upon allowance of a generic claim, Applicants are entitled to consideration of claims to additional species that depend from the allowed generic claim.

#### ***Rejection Based on 35 U.S.C. §102(b)***

##### ***U.S. Patent No. 4,131,721 to Fung et al.***

Claims 10-13 stand rejected under §102(b) as anticipated by U.S. Patent No. 4,131,721 to Fung et al. ("Fung"). In short, the Examiner is of the opinion that Fung teaches "a fuel cell comprising an anode, a cathode, and an electrolyte, wherein the graphitized carbon is used as the anode support" (1/9/07 Office Action at page 1, last paragraph). Applicants respectfully submit that this is not an accurate characterization of Fung, and thus traverse this rejection.

Fung does not disclose the use of graphitized carbon as the anode support. Instead, it is directed to a fuel cell wherein "suitable support particles ... are finely divided

carbon” (col. 3, lines 3-4), which “carbon is activated ... with a phosphorous-oxygen-containing compound” (col. 3, lines 5-7). As explained at col. 3, lines 9-13, stability was obtained with activated carbon having a certain surface area and a certain phosphorous level “based on the weight of the carbon support”. At col. 3, lines 13-15, Fung identifies the physical properties and the phosphorus level of a variety “of such activated carbon supports” treated with phosphoric acid. Further, Fung teaches formation of platinum crystallites on the surface of the “activated carbon support particles” (col. 3, lines 40-43), followed by the activation of the same (col. 3, lines 59-60). Preferred deposition levels of the platinum range from about 5% to about 25% (or more) “based on the weight of the carbon support particles” (col. 4, lines 12-15). Thus, as evidenced by the above quotes, Fung teaches an electrocatalyst that uses carbon particles as the support for the platinum catalyst.

The only mention of “graphitized carbon” in Fung has to do with mixing the electrocatalyst with graphitized carbon and a binder prior to being pressed onto a gold screen to form an electrode (col. 4, lines 23-26). Clearly, the graphitized carbon is serving as the anode in this context, and in no instance does Fung disclose an anode comprising a supported catalyst comprising graphitic carbon. To further clarify this distinction, Applicants have amended claim 10 to recite a fuel cell comprising, *inter alia*, an “anode comprising a supported catalyst wherein said support comprises graphitic carbon”. In short, Applicants have incorporated the language of dependent claims 11-14 into claim 10, and amended these claims in a manner consistent with claim 10. No new matter has been added by way of these amendments.

Accordingly, Applicants submit that claim 10, as well as claims 11-15 that depend therefrom, are novel over Fung, and request that this ground of rejection be withdrawn.

U.S. Patent No. 5,277,996 to Marchetti et al.

Claims 10-13 stand rejected under §102(b) as anticipated by U.S. Patent No. 5,277,996 to Marchetti et al. (“Marchetti”). As with Fung, the Examiner is also of the opinion that Marchetti teaches “a fuel cell comprising an anode, a cathode, and an electrolyte, wherein the graphitized carbon is used as the anode support” (1/9/07 Office Action at page 2, third paragraph). Applicants respectfully traverse this rejection.

Marchetti does not disclose the use of graphitized carbon as the anode support. Instead, Marchetti discloses electrodes that utilize graphitized carbon as a porous carbon substrate layer (col. 3, lines 11-12). An anchor layer ( $C_{60}$  fullerene) is provided on the porous carbon layer (col. 3, lines 13-15), to which a platinum layer is attached (col. 3, lines 16-18). Thus, the  $C_{60}$  fullerene “anchor layer” serves as the platinum support layer, not the underlying graphitized carbon substrate. Thus, Marchetti does not anticipate claim 10 since this claim recites the catalyst support as graphitic carbon (which Marchetti does not disclose). Further, the  $C_{60}$  fullerene support is not graphitic carbon as specifically recited in claim 10.

Accordingly, Applicants submit that claim 10, as well as claims 11-15 that depend therefrom, are novel over Marchetti, and request that this ground of rejection be withdrawn.

***Rejection Based on 35 U.S.C. §103(a)***

Claims 10-13 stand rejected under §103(a) as obvious over U.S. Patent No. 4,810,594 to Bregoli et al. (Bregoli) in view of Fung, while claims 14 and 15 stand rejected over various combinations of Fung, Marchetti, Bregoli, U.S. Patent No. 5,096,560 to Takai et al. (Takai), and U.S. Patent No. 5,681,435 to Joshi et al. (Joshi), for the reasons set forth in the 1/9/07 Office Action at pages 3-7). Applicants respectfully traverse these rejections.

With regard to claims 10-13, the Examiner specifically states that Bregoli does “not teach the use of graphitized carbon as the anode support” (1/9/07 Office Action at page 3, line 5 of numbered paragraph 6). As discussed above, Fung similarly does not teach the use of graphitic carbon as the catalyst support. Thus, the combination of Bregoli with Fung cannot render claim 10 unpatentable, since all the recited elements are clearly not taught by these references. In other words, even if combined in the manner suggested by the Examiner, the resulting combination lacks graphitic carbon as the catalyst support.

As for the rejection of claims 14 and 15, the references cited by the Examiner are directed to the specific features recited in these claims. However, none of these references teach or suggest the subject matter as currently recited in claim 10; namely, a fuel cell with improved voltage reversal tolerance, wherein the fuel cell comprises, *inter alia*, an anode comprising supported catalyst, wherein the support comprises graphitic carbon and is more resistant to

oxidative corrosion than carbon black. Such features are simply not present in the various references (taken alone or in any combination).

Accordingly, Applicants submit that claim 10, as well as claims 11-15 that depend therefrom, are novel over the cited references, and request that this ground of rejection also be withdrawn.

***Conclusion***

In view of the above amendments and remarks, allowance of claims 10-15 is respectfully requested. A good faith effort has been made to place this application in condition for allowance. However, should any further issue require attention prior to allowance, the Examiner is requested to contact the undersigned at (206) 622-4900 to resolve the same.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,  
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